# Update on IEC Standards

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- Meeting schedule
- Status of various IEC standards/projects
- Focus on LED standards

# Meeting Schedule

- October 2010 – Seattle - maintenance teams
  - Manley, Beletich, Napaporn, Cristobal, Reyes
- January 2011 – Frankfurt - technical panels
  - Manley
- April 2011 – Switzerland (Japan) - maint teams
  - Manley, Beletich, Mustar
- June 2011 – Frankfurt - technical panels (3 weeks)
  - Manley, Beletich, Cristobal, Mustar, Hua, Liu
- 17 October 2011 – Netherlands - maint teams
  - Manley, Beletich, ???

# Status of various IEC standards/ projects

# Incandescent Lamps

- Tungsten filament lamps
  - Safety standard
    - Photobiological safety
- Tungsten halogen lamps
  - Safety standard
    - Photobiological safety
    - Maximum wattage limits
    - Gas pressure
  - Performance standard
    - Alignment of tolerance with EU regulations

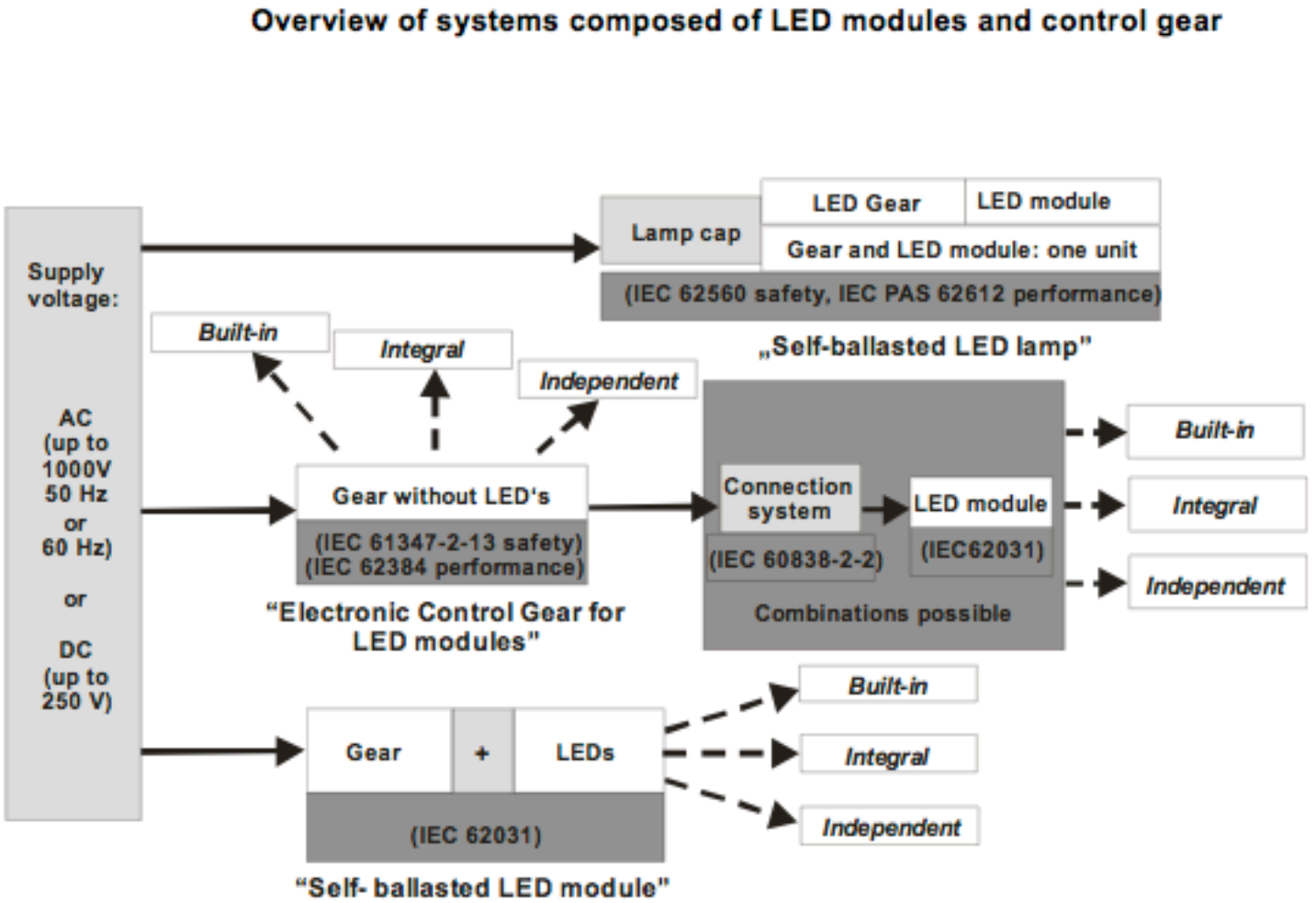
# Photobiological Safety

- Upcoming EU regulations for photobiological safety:
  - Concern originated from Lasers
  - “Blue light” damage to human eyes from intense blue light hazard (Not related to UV).
  - Lamps must show that they are not in a “risk category”
  - Low risk lamps include Incandescent, CFL, fluorescent

# Fluorescent Lamps

- Performance standards
  - Dimming
- CFLi – safety IEC 60968
  - New edition being drafted
- CFLi – performance IEC 60969
  - Separate presentation

# Categorisation of LED Lamps

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# Self-Ballasted LED Lamps

- IEC 62560 (>50V) - safety
  - Published February 2011
- IEC PAS 62612 (>50V) - performance
  - Published 2009 as PAS
  - PAS –Publically Available Specification (fast tracked)
  - PAS not available for safety documents. Expire after one year with a possible year extension. Within this time frame a new standard needs to be established
  - NP circulated
- (<50V)
  - Draft expected for June panel

# LED Modules (lamps)

- 62031 - safety
  - First published 2008
  - Amendment 1 due late 2011
- 62717 - performance
  - Published April 2011 as PAS
  - PAS expires after one year with a possible 1 year extension.
  - The reason for the short validity period is the 6000 hr testing time. Annex G proposes to reduce time to 2000 hr.
  - NP started to publish as a standard

# LED Modules (Driver - Power supply)

- IEC 61347-2-13
  - Safety, Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
  - Sometimes known as “drivers”
  - Usually a separate, standalone “power supply”
  - DC circulated for amendment 1
- IEC 62384 – performance

# Non-Ballasted LED Lamps (Retrofit)

- 62663-1 – Safety <120V DC
  - At CD stage
- 62663-2 – performance
  - At CD stage
  - Target date for publication Aug 2012

# Other LED Standards in Progress

- LED Luminaires
- LED binning
- LED Definitions
- LED lifetime prediction
- OLED

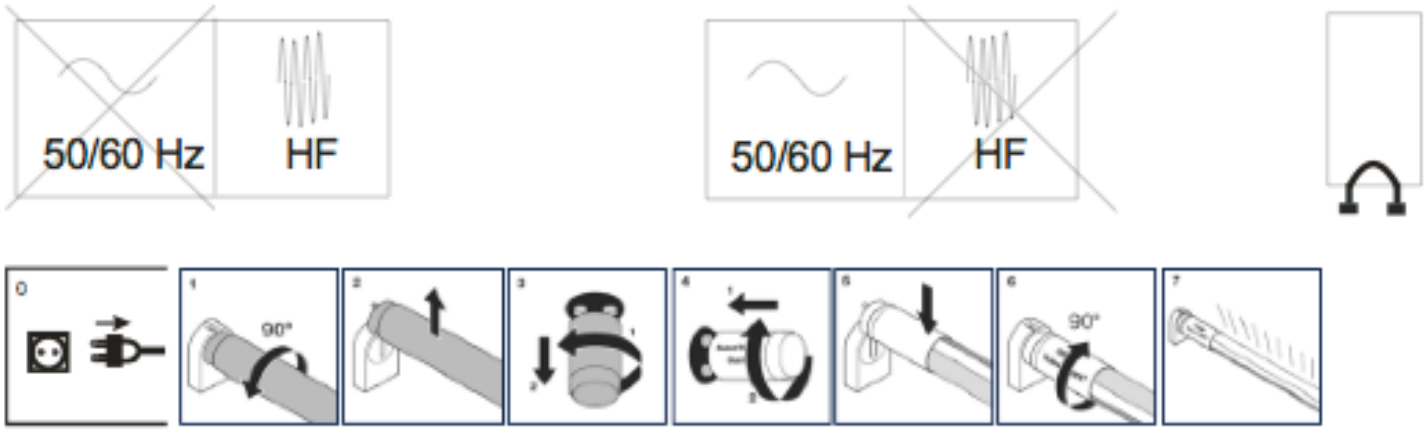
- All ongoing LED standards to be discussed at upcoming technical panels in Frankfurt, late June

# Typical LED Performance Requirements

- Measured power ≤ 115% of rated power.
- Luminous flux ≥ 90% of rated
- CCT within rated MacAdams ellipse
- CRI ≥ rated CRI minus 5 points
- Lamp life: combination of lumen maintenance and life of inbuilt ballast
- Lumen maintenance: as per classes defined in the PAS and related to rated lamp life. Note that testing to 25% rated life is required (to maximum of 6000 hours)

# Requirements for double-capped retrofit LED lamp

- CD closed, CDV being prepared.
- Being developed as Annex C to IEC 62560
- Marking




- EU have issued an “advisory” on safety of lamp ends in absence of any standard.

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# Requirements for double-capped retrofit LED lamp (cont)

- Interchangeability
- Insulation resistance
- Electric strength

Others

Zhaga issues

# IEC 62707

- 34A/1482/DC Proposal for PAS/IEC 62707-3 - LED - Binning - Part 2: Forward voltage
- 34A/1481/DC Proposal for PAS/IEC 62707-2 - LED - Binning - Part 2: Luminous flux
- 34A/1480/DC Proposal for a PAS on 'LED - Testing and prediction of lumen maintenance

- 34A/1473/DC Call for comments regarding the inclusion of power quality in the form of current displacement factor for mains connected LED lamps and modules. To be included in 34A/1445/NP - LED Modules for general lighting - Performance requirements.

- 34D_996_NP - Luminaire LED Performance

**“Built in”**

- designed to be built into a luminaire and not intended to be mounted outside a luminaire without special precautions

**“integral”, ie component**

- component which forms a non-replaceable part of a luminaire and which cannot be tested separately from the luminaire

**Independent lamp controlgear**

- Lamp controlgear consisting of one or more separate elements so designed that it can be mounted separately outside a luminaire, with protection according to the marking of the lamp controlgear and without any additional enclosure. This may consist of a built-in lamp controlgear housed in a suitable

**semi-luminaire**

- unit similar to a self-ballasted lamp but designed to utilize a replaceable light source and/or starting device